

T04D04 – 4.3 IB Practice MS

1. (i) as molecules become larger/heavier/have higher M_r values/
number of electrons increases; van der Waals'/London/
dispersion forces increase; 2
- (ii) hydrogen bonding **between molecules** in H_2O ; this bonding is stronger
(than van der Waals' forces); 2
Must be an implied comparison with (i)
2. CH_3Cl – dipole-dipole attractions;
 CH_4 – van der Waals'/dispersion/London forces;
 CH_3OH – hydrogen bond; 3
3. (i) $C_2H_6 < CH_3CHO, < C_2H_5OH < CH_3COOH$; 2
Award [2] if all correct, [1] if first and last correct.
- (ii) C_2H_6 non polar;
 CH_3CHO polar;
 C_2H_5OH polar;
 CH_3COOH polar;
Award [2] for all four correct, [1] for 3 or 2 correct.
boiling point depends on intermolecular forces;
least energy required for van der Waals' forces/maximum energy
for hydrogen bonding;
 C_2H_6 van der Waals' forces only;
 CH_3CHO dipole-dipole;
 C_2H_5OH and CH_3COOH hydrogen bonding;
hydrogen bonding is stronger in CH_3COOH /greater polarity/
greater molecular mass/greater van der Waals' forces; 8
- [4]
[3]
[10]